



# EFFICACY OF PLP LIQUID FORMULA Tested by New Mexico State University

## MOSQUITO TESTING

OCTOBER 2018 | Prepared by  
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**This experiment was to determine the efficacy of the PLP Liquid Formula in repelling Aedes Aegypti Mosquitoes using a taxis cage and wind tunnel setup.**

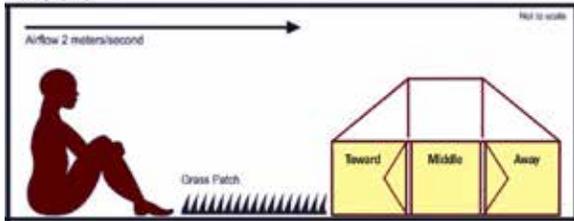


Figure 1

### PRODUCT APPLICATION

*PLP Natural Products Liquid Formula* - Approximately 1 ml of the product was diluted in 12 ml of water and sprayed using a small spray bottle. The entirety of the bottle (13 ml) was sprayed evenly onto a 12"x12" (30.48x30.48 cm) piece of artificial grass.

A volunteer sat upwind of the taxis cage and the grass was placed between the human volunteer and the taxis cage.

### ATTRACTION

After application of the *PLP Liquid Formula*, mosquito attraction dropped from 70.63% to 31.84%. *PLP Liquid Formula* reduced overall attraction by 38.79%. After application of *PLP Liquid Formula*, mosquito attraction dropped from 70.63% to 31.84%.

### CONCLUSION

Applying **PLP LIQUID FORMULA** to artificial grass had a strong repellency effect on female *Aedes aegypti* (yellow fever mosquitoes) in the bioassay we performed.

It is important to note, that using this assay, even strong repellents like 100% DEET applied to a person did not reduce attraction lower than 25% in a comparable study.



The product was tested over a 15-minute period to determine if there was a reduction in the mosquitoes' attraction to the human volunteer in the presence of the treated grass. The human volunteer sat 60 inches (152.4 cm) upwind of the taxis cage and the grass was approximately 32 inches (81.28 cm) upwind of the taxis cage.

### EXPERIMENTAL PROTOCOL

The taxis cage was placed inside a wind tunnel with an air flow of 2 m/s. 50-100 mosquitoes were placed in the middle chamber of the taxis cage (Figure 1) and allowed to acclimate for 2 minutes. Afterwards, a volunteer sat upwind of the taxis cage for 15 minutes (Figure 1). The trap door of the taxis cage was opened to allow mosquitoes to fly toward or away from the volunteer into adjacent chambers. After 15 minutes, the trap door was shut segregating the chambers again.

The mosquitoes were evaluated based on their location in the taxis cage. If the mosquitoes were located in the chamber closer to the volunteer they were categorized as flying "toward". If the mosquitoes flew into the chamber further from the volunteer, they were categorized as "away". If the mosquitoes remained in the middle chamber, they were categorized as in the "middle".

The mosquitoes in each chamber were counted manually. Three replicates were performed to determine the statistical significance of the results. For the positive control treatment, the volunteer was in the wind tunnel with an untreated grass patch. For the negative control, the wind tunnel contained only the untreated grass patch and the taxis cage.

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